



SwitchX-2 60 Port Ethernet Hardware System Installation Guide

P/N:

MSX1024B-1BFS, MSX1024B-1BRS, MSX1024B-2BFS, MSX1024B-2BRS

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Revision History

Table 1 - Revision History of this Installation Guide

Revision	Date	Details
1.0	February 2013	Initial release

About this Manual

This manual describes the installation and set-up instructions of the Mellanox switch family.

Intended Audience

This manual is intended for users and system administrators responsible for installing and setting up the switch platform.

Related Documentation

The documentation set accompanying the top of rack switch platform includes the following:

Table 2 - Reference Documents

Document Name	Description
<i>Switch Hardware User Manual</i>	This document contains HW descriptions, LED assignments and HW specifications among other things.
<i>Switch Product Release Notes</i>	For possible hardware issues see the switch support product page. This requires a customer support login. Look up the relevant SwitchX®-based switch system/series release note file.
<i>Mellanox MLNX-OS Software User Manual</i>	This document contains information regarding configuring and managing Mellanox Technologies Switch Platforms.
<i>MLNX-OS™ Software Command Reference Guide</i>	Command Reference Guide for <i>MLNX-OS™</i> listing all of the commands available through <i>MLNX-OS™</i> with explanations and examples.

All of these documents can be found on the Mellanox Website. They are available either through the product pages or through the support page with a login of user and password.

Document Conventions

When discussing memory sizes, MB and MBytes are used in this document to mean size in mega bytes. The use of Mb or Mbits (small b) indicates size in mega bits.



This symbol makes recommendations to the user.



This symbol indicates information that is helpful to the user.



This symbol indicates a situation that can potentially cause damage to hardware or software.



BEWARE! This symbol indicates a situation that can potentially cause personal injury or damage to hardware or software.

Mellanox Part Numbering Legend

Place	Field	Decoder
M		Mellanox Technologies
SX	System Type	SwitchX® switch Family
P	Data Transfer Protocol	1 = Ethernet
R	Size of box	0 = 1U 1 = 1.5U 2 = 2U
FF	40 Gb/s equivalent throughput	16 = 640Gb/s 24 = 960Gb/s 35 = 2880 Gb/s Light version of the Management software 36 = 2880 Gb/s
C	Data Rate	X = 10Gb/s Ethernet B = 40Gb/s Ethernet
-	Separator	
P	# Power Supplies	0=0, 1=1, 2=2....
M	Depth of the Unit	S = standard depth, B = short depth
Y	Air Flow direction	R= Connector side to Power side airflow F= Power Side side to Connector side airflow
R	Chip Generation	R – SwitchX S – SwitchX-2

1 Mechanical Installation

Installation and initialization of the switch platform are straightforward processes, requiring attention to the normal mechanical, power, and thermal precautions for rack-mounted equipment.

1.1 Installation Safety Warnings

For Safety Warnings in French, German, and Spanish see the User Manual (you can download it from the mellanox.com website MSX1024 product page).

1. Installation Instructions



Read all installation instructions before connecting the equipment to the power source.

2. Over-temperature



This equipment should not be operated in an area with an ambient temperature exceeding the maximum recommended: 45°C (113°F). Moreover, to guarantee proper air flow, allow at least 8cm (3 inches) of clearance around the ventilation openings.

3. Stacking the Chassis



The chassis should not be stacked on any other equipment. If the chassis falls, it can cause bodily injury and equipment damage.

4. Redundant Power Supply Connection - Electrical Hazard



This product includes a blank cover over the space for the redundant power supply. Do not operate the product if the blank cover is not securely fastened or if it is removed.

5. During Lightning - Electrical Hazard



During periods of lightning activity, do not work on the equipment or connect or disconnect cables.

6. Copper Cable Connecting/Disconnecting



Copper cables are heavy and not flexible, as such they should be carefully attached to or detached from the connectors. Refer to the cable manufacturer for special warnings and instructions.

7. Rack Mounting and Servicing



When this product is mounted or serviced in a rack, special precautions must be taken to ensure that the system remains stable. In general you should fill the rack with equipment starting from the bottom to the top.

8. Equipment Installation



This equipment should be installed, replaced, or serviced only by trained and qualified personnel.

9. Equipment Disposal



Disposal of this equipment should be in accordance to all national laws and regulations.

10. Local and National Electrical Codes



This equipment should be installed in compliance with local and national electrical codes.

11. Hazardous Radiation Exposure



Caution – Use of controls or adjustment or performance of procedures other than those specified herein may result in hazardous radiation exposure.



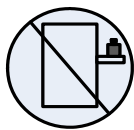
CLASS 1 LASER PRODUCT and reference to the most recent laser standards:
IEC 60 825-1:1993 + A1:1997 + A2:2001 and EN 60825-1:1994+A1:1996+ A2:2001

12. UL Approved AC Power Cords



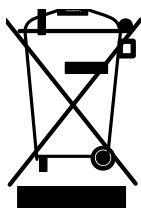
For North American power connection, select a power supply cord that is UL Listed and CSA Certified
3 - conductor, [18 AWG], terminated in a molded on plug cap rated at 125 V, [15 A], with a minimum length of 1.5m [six feet] but no longer than 4.5m
For European connection, select a power supply cord that is internationally harmonized and marked “<HAR>”,
3 - conductor, minimum 0,75 mm² wire, rated at 300 V, with a PVC insulated jacket.
The cord must have a molded on plug cap rated 250 V, 10 A.

13. Do Not Use the Switch as a Shelf or Work Space



Caution: Slide/rail mounted equipment is not to be used as a shelf or a work space.

14. WEEE Directive



According to the WEEE Directive 2002/96/EC, all waste electrical and electronic equipment (EEE) should be collected separately and not disposed of with regular household waste.

Dispose of this product and all of its parts in a responsible and environmentally friendly way.

The switch platform can be rack mounted and is designed for installation in a standard 19" rack. The power side of the switch includes a hot-swap power supply module, a blank cover for an optional second PS unit for redundancy, and 2 hot-swap fan trays. There are two possible air flow directions. Be sure that the switch air flow direction is compatible with your system, rack, and PS units. The connector side of the switch has the ports, system LEDs, and management connection ports.

The switch platform contains auto-sensing 100 - 240 VAC connections for all possible PS units.

The installer should use a rack capable of supporting the mechanical and environmental characteristics of a fully populated platform.



The rack mounting holes conform to the EIA-310 standard for 19-inch racks. Take precautions to guarantee proper ventilation in order to maintain good airflow at ambient temperature. Cable routing in particular should not impede the air exhaust from the chassis.

1.1.1 Installation Kits

There are two Installation kit options. One long and one short. Both the standard and the short switches can be mounted using the long rail kit.

Table 3 - Installation Kit According to Rack Size

Kit OPN	Rack Size
MSX60-BKIT	40-60 cm deep
MSX60-SKIT	60-80 cm deep

1.2 Package Contents

Before you install your new switch, unpack the system and check to make sure that all the parts have been sent, check this against the parts list below. Check the parts for visible damage that may have occurred during shipping.

The switch comes packed with the following items:

- 1 X – switch
- 1 X – installation kit
- X – power cable one for each PS unit – Type C13-C14
 - A single power cord for each power supply unit can be ordered at no extra charge
- 1 X – Harness
 - HAR000028 – Harness RS232 2M cable – DB9 to RJ-45 switches
- 1 X – Quick Start Guide
- 1 X – China RoHS statement



If anything is damaged or missing, contact your customer representative immediately. For customer support go to:
www.mellanox.com => Support => Customer Support Portal Login

1.3 Mechanical Installation

Tools and Customer Supplied Parts:

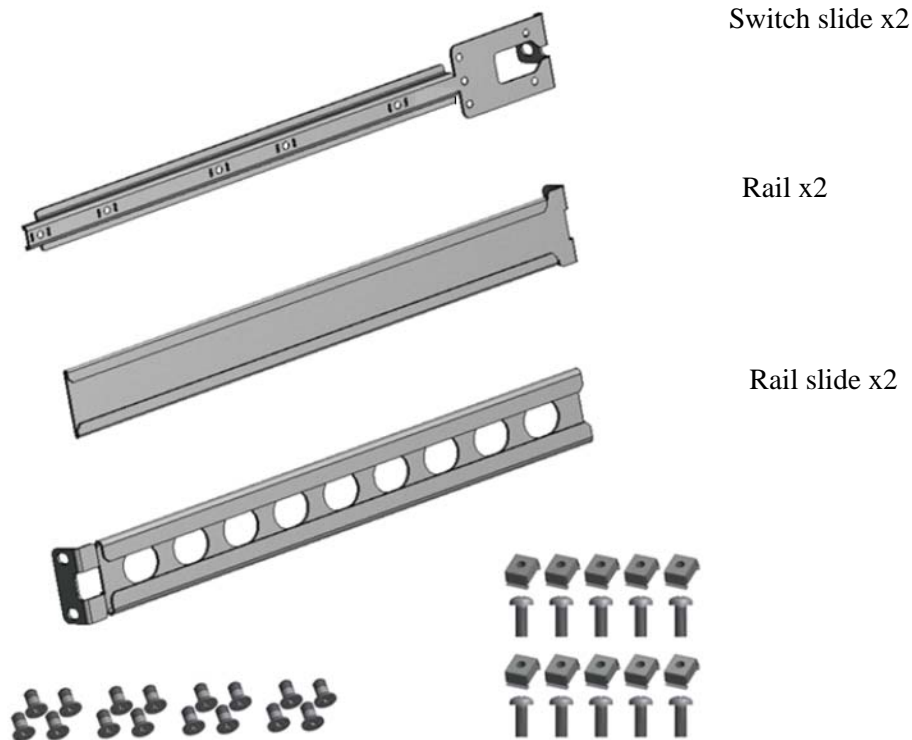
- Phillips Screwdrivers #1 and #2
- ESD strap
- ESD mat
- Grounding screw
- Grounding wire sufficient to reach a valid ground.

For racks from 60cm to 80cm deep either use the standard depth switches with the long rail kit or the short switches with the long rail kit.

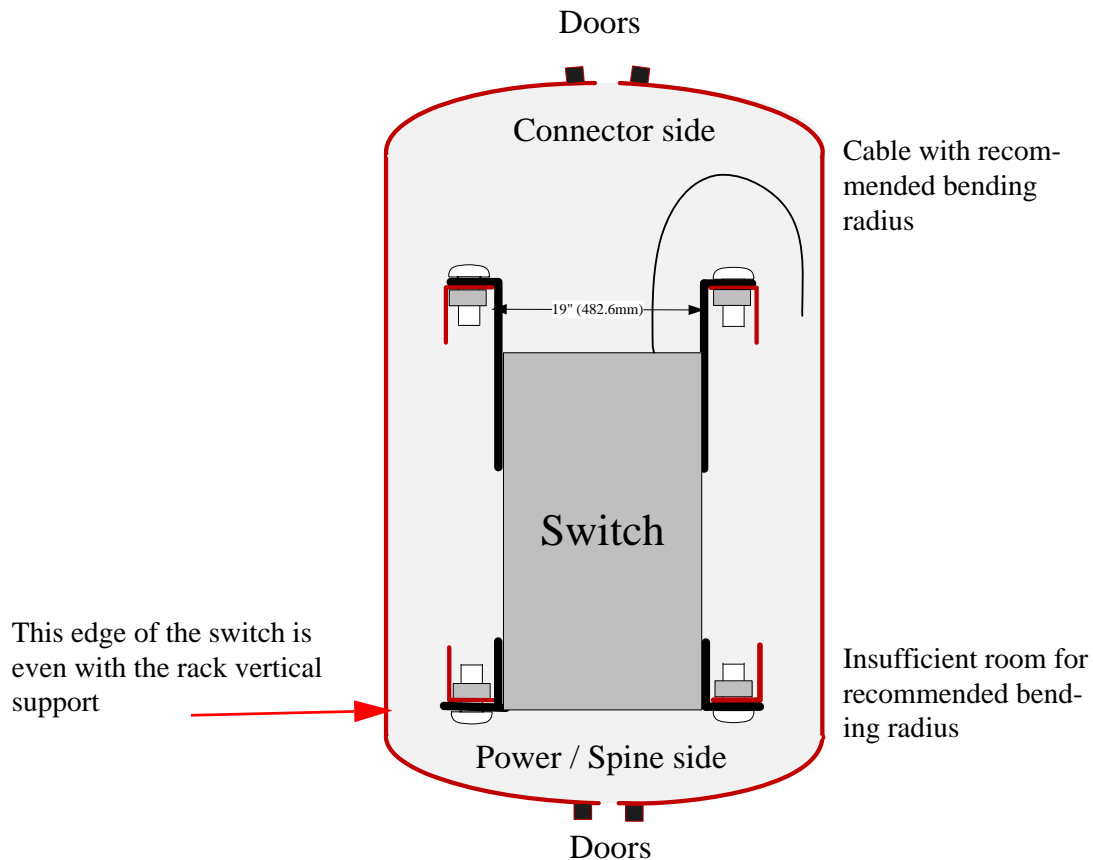
Parts included in the rail kit:

- 2 rails
- 2 rail slides
- 2 switch slides
- 16 recessed flat head screws You will have extras!
- 10 caged nuts
- 10 pan head screws M6

Figure 1: Rack Rail Kit Parts



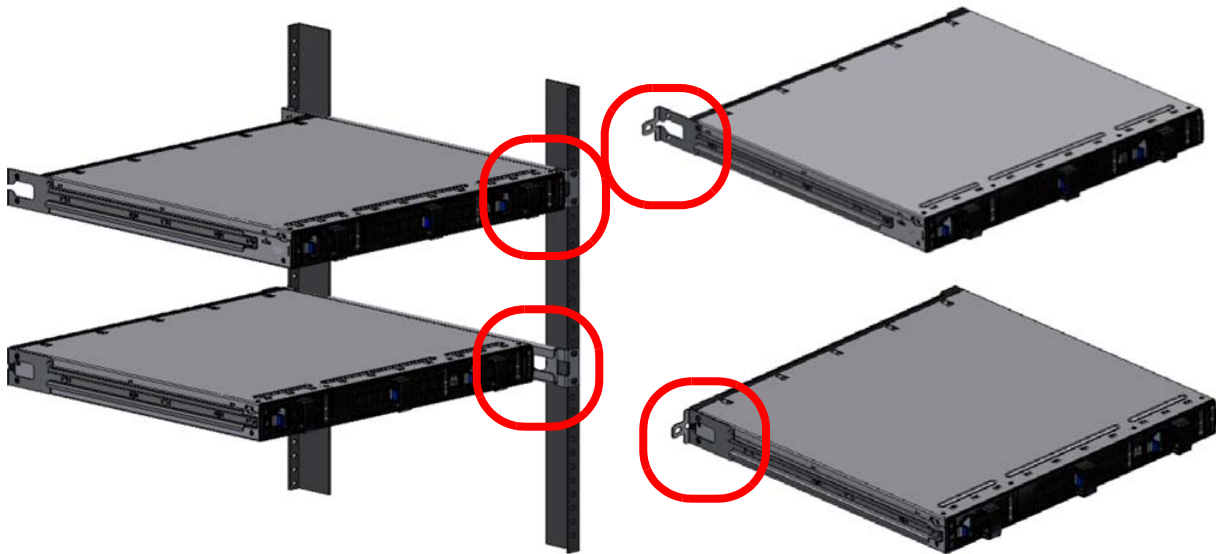
1. Place the ESD mat on the floor where you will be working and put on the ESD strap. Make sure the ESD strap is touching your skin and that the other end is connected to a verified ground.
2. Choose which side of the switch you want even with the rack vertical support. Either the side with the power supply units or the side with the QSFP connectors can be even with one of the vertical rack supports.

Figure 2: Placement of Switch in Rack

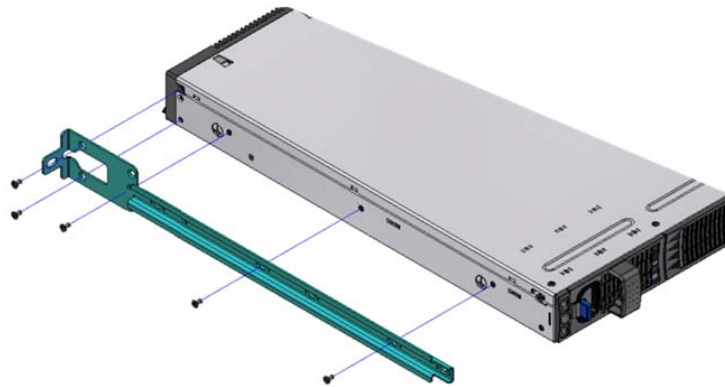
Consider the following when deciding where and how to mount the rails and rail slides:

The distance between the rack and the door can be as little as 1.57" (4 cm) on one side of the rack and as much as 7" (18 cm) on the other side of the rack. Keep in mind that there can be as many as 60 cables connected to the switch.

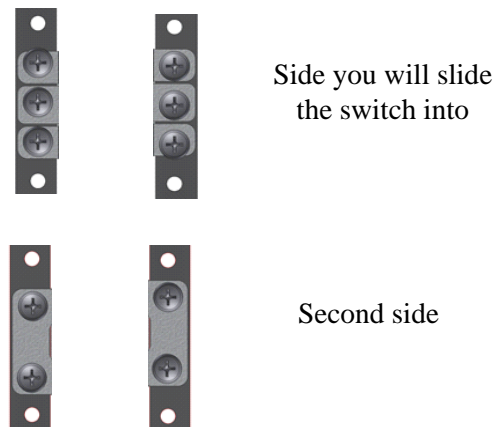
- Do you want the connector side recessed in the rack to allow for a larger cable bending radius? It is possible to recess the connector side by 2" (5cm) by optional placement of the switch rails. See Figure 3, "Mounting Options".
- Will the connector side be recessed past other equipment in the rack and will this be problematic?
- The installation kit allows for a 2" (5cm) recess of the switch past the vertical support.

Figure 3: Mounting Options

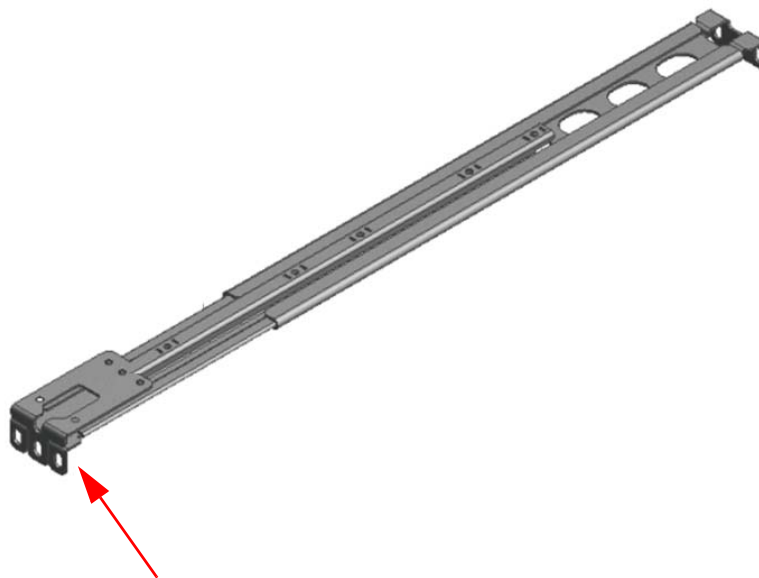
3. Decide which mounting option you want to use.
4. Screw the switch slides onto the switch. Use 5 flat head screws for short switches and 7 screws for standard depth switches, to connect each switch slide.

Figure 4: Screwing on the Rail

5 screws per side are needed for the short switch.
7 screws per side are needed for the standard switch.
There are 16 screws in the kit; you will have left over screws.

Figure 5: Inserting the Caged Nuts

5. Clip 6 caged nuts into the holes in the rack on the side of the rack you will be sliding the switch into. Check that both sides of the switch, power side and connector side, are at the same level in the rack.
6. Clip 4 more caged nuts into the holes on the opposite side of the rack. Check that both sides of the switch, left and right, are the same level in the rack.
7. Slide the rail into the rail slide.
8. Using two of the bolts for each corner install the rails and rail slides in the rack. Do not tighten the bolts yet.

Figure 6: Slide the Rail into the Rail Slide

This side of the rail kit goes on the side of the rack you will slide the switch into. This is the same side of the switch that will be next to the vertical support.

9. Slide the switch into the rails.
10. Tighten the bolts to 9.2 Nm or 81.5 pound inches.
11. Put the switch into place and screw the bolts into the nuts. Tighten the bolts to 9.2 Nm or 81.5 pound inches.
12. Ground the switch.
13. Plug in the power cables.
14. Check the Status LEDs and confirm that all of the LEDs show status lights consistent with normal operation.

Status LEDs 5 Minutes After Power On

Warning: Any yellow or red status LEDs are cause for concern and must be dealt with immediately.

It can take up to 5 minutes to boot up, during which time the status LED may indicate red.

15. You can start connecting all of the cables to the switch.

1.4 Grounding the Switch

Check to determine if your local or national electrical codes require an external ground to all IT components. If so, connect a ground wire to one of the casing screws and connect the other end to a valid ground. If you choose to not use the ground screw, make sure that the rack is properly grounded and that there is a valid ground connection between the chassis of the switch and the rack. Test the ground using an Ohm meter.



Some national and/or local codes may require IT components to be bonded and externally grounded (not including the power cord ground). You must follow all national and local codes when installing this equipment.

1.5 Power Connections and Initial Power On

The switch platform ships with one or two power supply units. For switches with only one unit installed, a second PS unit may be installed at a later time. Each supply has a separate AC recep-

tacle. The input voltage is auto-adjusting for 100 - 240VAC, 50-60Hz power connections. The power cords should be standard 3-wire AC power cords including a safety ground and rated for 15A or higher.



Caution: The switch platform will automatically power on when AC power is applied. There is no power switch. Check all boards, power supplies, and fan tray modules for proper insertion before plugging in a power cable.



Caution: After inserting a power cable and confirming the green system status LED light is on; make sure that the Fan Status indicator shows green.

If the fan status indicator is not green then unplug the power connection and check that the fan module is inserted properly and that the mating connector of the fan unit is free of any dirt and/or obstacles.



Caution: When turning off the switch, make sure ALL Connector LEDS are off to ensure a powered down status.



Do not hot swap the power supply if your switch has only one power supply. You must power down the system to replace the power supply unit when there is only one PS unit in the switch.

Figure 7: Two Power Inlets - Electric Caution Notifications

CAUTION	ACHTUNG	ATTENTION
Risk of electric shock and energy hazard. The two PS units are independent.	Gefahr des elektrischen Schocks. Entfernen des Netzsteckers eines Netzteils spannungsfrei. Um alle Einheiten spannungsfrei zu machen sind die Netzstecker aller Netzteile zu entfernen	Risque de choc et de danger électriques. Le débranchement d'une seule alimentation stabilisée ne débranchera uniquement qu'un module "Alimentation Stabilisée". Pour isoler complètement le module en cause, Il faut débrancher toutes les alimentations stabilisées.
Disconnect all power supplies to ensure a powered down state inside of the switch platform.		

1.6 Battery Replacement

Mellanox Technologies does not support battery replacement. Customer removal of the switch cover will void the warranty. Only Remove the cover to comply with WEEE directives or to disassemble for environmentally approved disposal.



Customer removal of the switch cover will void the warranty.

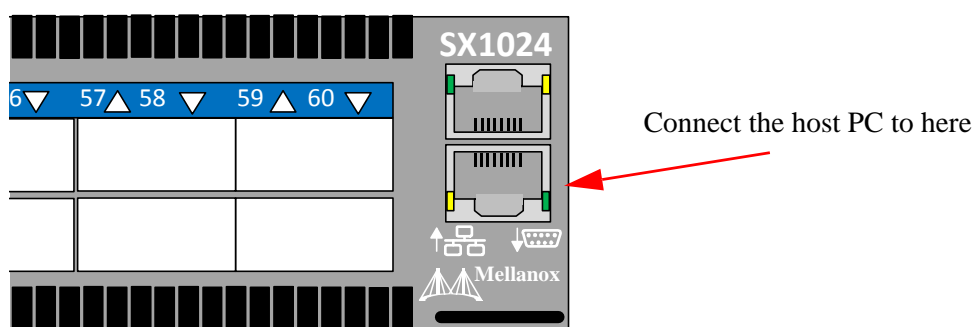
2 Configuring the Switch

The procedures described in this chapter assume that you have already installed and powered-on your switch according to the instructions in the *Switch Installation Guide*, this document.

2.1 Configuring the Switch for the First Time

- Step 1.** Connect the host PC to the Console (RJ-45) port of the switch system using the supplied cable. The Console ports for systems are shown below as examples.

Figure 8: Console Port



Make sure to connect to the Console RJ-45 port of the switch and not to the (Ethernet) MGT port.



No remote IP connection is available at this stage.

- Step 2.** Configure a serial terminal program (for example, HyperTerminal, minicom, or Tera Term) on your host PC with the settings described in [Table 4](#).

Table 4 - Serial Terminal Program Configuration

Parameter	Setting
Baud Rate	9600
Data bits	8
Stop bits	1
Parity	None

Table 4 - Serial Terminal Program Configuration (Continued)

Parameter	Setting
Flow Control	None

Step 3. Login (from a serial terminal program) as *admin* and use *admin* as password. This starts the Mellanox configuration wizard.

Step 4. Go through the Mellanox configuration wizard. Table 5 shows an example of a wizard session.

Table 5 - Configuration Wizard Session - IP Configuration by DHCP (Sheet 1 of 2)

Wizard Session Display (Example)	Comments
Mellanox configuration wizard Do you want to use the wizard for initial configuration? yes	You must perform this configuration the first time you operate the switch or after resetting the switch. Type 'y' and then press <Enter>.
Step1: Hostname? [switch-1]	If you wish to accept the default hostname, then press <Enter>. Otherwise, type a different hostname and press <Enter>.
Step 2: Use DHCP on mgmt0 interface? [no]	Perform this step to obtain an IP address for the switch. (eth0 is the management port of the switch.) If you wish the DHCP server to assign the IP address, type 'yes' and press <Enter>. If you type 'no' (no DHCP), then you will be asked whether you wish to use the 'zeroconf' configuration or not. If you enter 'yes' (yes Zeroconf), the session will continue as shown in Table 6. If you enter 'no' (no Zeroconf), then you need to enter a <i>static</i> IP, and the session will continue as shown in Table 7.
Step 3: Enable IPv6? [yes] yes	The management interface will be able to use IPv6 addresses.
Step 4: Enable IPv6 autoconfig (SLAAC) on mgmt0 interface? [no] no	This turns on autoconfiguration of the IPv6 addresses. This is unsuitable for DHCPv6.

Table 5 - Configuration Wizard Session - IP Configuration by DHCP (Sheet 2 of 2)

Wizard Session Display (Example)	Comments
<p>Step 5: Admin password (Press <Enter> to leave unchanged)? <new_password></p> <p>Step 6: Confirm admin password? <new_password></p>	<p>To avoid illegal access to the machine, please type a password and then press <Enter>. Then confirm the password by re-entering it.</p> <p>Note that password characters are <i>not</i> printed.</p>
<p>You have entered the following information:</p> <ol style="list-style-type: none"> 1. Hostname: <switch name> 2. Use DHCP on mgmt0 interface: yes 3. Enable IPv6: yes 4. Enable IPv6 autoconfig (SLAAC) on mgmt0 interface: no 5. Admin password (Enter to leave unchanged): (CHANGED) <p>To change an answer, enter the step number to return to.</p> <p>Otherwise hit <enter> to save changes and exit.</p> <p>Choice: <Enter></p> <p>Configuration changes saved.</p> <p>To return to the wizard from the CLI, enter the “configuration jump-start” command from configuration mode. Launching CLI...</p> <p><switch name> [></p>	<p>The wizard displays a summary of your choices and then asks you to confirm the choices or to re-edit them.</p> <p>Either press <Enter> to save changes and exit, or enter the configuration step number that you wish to return to.</p> <p>Note: To run the command “configuration jump-start” you must be in Config mode.</p>

Table 6 - Configuration Wizard Session - IP Zeroconf Configuration

Wizard Session Display - IP Zeroconf Configuration (Example)
<p>Mellanox configuration wizard</p> <p>Do you want to use the wizard for initial configuration? y</p> <p>Step 1: Hostname? [switch-112126]</p> <p>Step 2: Use DHCP on mgmt0 interface? [yes] no</p> <p>Step 3: Use zeroconf on mgmt0 interface? [no] yes</p> <p>Step 4: Default gateway? [For example:192.168.10.1]</p> <p>Step 5: Primary DNS server?</p> <p>Step 6: Domain name?</p> <p>Step 7: Enable IPv6? [yes] yes</p> <p>Step 8: Enable IPv6 autoconfig (SLAAC) on mgmt0 interface? [no] no</p> <p>Step 9: Admin password (Enter to leave unchanged)?</p> <p>Step 9: Confirm admin password? (Enter to leave unchanged)?</p> <p>You have entered the following information:</p> <ol style="list-style-type: none"> 1. Hostname: switch-112126 2. Use DHCP on mgmt0 interface: no 3. Use zeroconf on mgmt0 interface? [no] yes 4. Default gateway: 192.168.10.1 5. Primary DNS server: 6. Domain name: 7. Enable IPv6: yes 8. Enable IPv6 autoconfig (SLAAC) on mgmt0 interface: no 9. Admin password (Enter to leave unchanged): (unchanged) <p>To change an answer, enter the step number to return to. Otherwise hit <enter> to save changes and exit.</p> <p>Choice:</p> <p>Configuration changes saved.</p> <p>To return to the wizard from the CLI, enter the "configuration jump-start" command from configure mode. Launching CLI...</p> <p>switch-1 ></p>

Table 7 - Configuration Wizard Session - Static IP Configuration

Wizard Session Display - Static IP Configuration (Example)
<p>Mellanox configuration wizard</p> <p>Do you want to use the wizard for initial configuration? y</p> <p>Step 1: Hostname? [switch-112126]</p> <p>Step 2: Use DHCP on mgmt0 interface? [yes] n</p> <p>Step 3: Use zeroconf on mgmt0 interface? [no]</p> <p>Step 4: Primary IP address? [for example 192.168.10.4]</p> <p>Mask length may not be zero if address is not zero (interface eth0)</p> <p>Step 5: Netmask? [0.0.0.0] 255.255.255.0</p> <p>Step 6: Default gateway? [for example 192.168.10.1]</p> <p>Step 7: Primary DNS server?</p> <p>Step 8: Domain name?</p> <p>Step 9: Enable IPv6? [yes] yes</p> <p>Step 10: Enable IPv6 autoconfig (SLAAC) on mgmt0 interface? [no] no</p> <p>Step 11: Admin password (Enter to leave unchanged)?</p> <p>You have entered the following information:</p> <ol style="list-style-type: none"> 1. Hostname: switch-112126 2. Use DHCP on mgmt0 interface: no 3. Use zeroconf on mgmt0 interface: no 4. Primary IP address: 192.168.10.4 5. Netmask: 255.255.255.0 6. Default gateway: 192.168.10.1 7. Primary DNS server: 8. Domain name: 9. Enable IPv6: yes 10. Enable IPv6 autoconfig (SLAAC) on mgmt0 interface: no 11. Admin password (Enter to leave unchanged): (unchanged) <p>To change an answer, enter the step number to return to. Otherwise hit <enter> to save changes and exit.</p> <p>Choice:</p> <p>Configuration changes saved.</p> <p>To return to the wizard from the CLI, enter the "configuration jump-start" command from configure mode. Launching CLI...</p> <p>switch-1 ></p>

Step 5. Before attempting a remote (for example, SSH) connection to the switch, check the mgmt0 interface configuration. Specifically, verify the existence of an IP address. To check the current mgmt0 configuration, enter the following commands:

```
sx-43 [standalone: master] > enable
sx-43 [standalone: master] # show interfaces mgmt0
```


The following is an example of the output:

```

Interface mgmt0 state

Admin up:          yes
Link up:           yes
IP address:        192.168.10.43
Netmask:           255.255.255.0
Speed:             1000Mb/s (auto)
Duplex:            full (auto)
Interface type:    ethernet
Interface source:  physical
MTU:               1500
HW address:        00:02:C9:11:2A:AE
Comment:

RX bytes:          1343502058      TX bytes:      313920869
RX packets:        17589211       TX packets:    992717
RX mcast packets:  0              TX discards:   0
RX discards:       0              TX errors:     0
RX errors:         0              TX overruns:   0
RX overruns:       0              TX carrier:    0
RX frame:          0              TX collisions: 0
                                   TX queue len:  1000

```

2.2 Rerunning the Wizard

If you want to rerun the wizard run the following commands:

```

sx-43 [standalone: master] > enable
sx-43 [standalone: master]# configure terminal
sx-43 [standalone: master]# configuration jump-start

```

3 Connecting to the Switch Platform

3.1 Starting an SSH Connection to the Switch (CLI)

- Step 1.** Set up an Ethernet connection between the switch and a local network machine (“the remote machine” henceforth) using a standard RJ-45 connector.
- Step 2.** Connect to the remote machine (*rem_mach1* is used as an example).
- Step 3.** Start a remote shell to the switch using the following command using `<switch_IP_address>` is the IP address of the switch.

```
rem_mach1 > ssh -l <username> <switch ip address>

Mellanox MLNX-OS Switch Management

Password:

Last login: Thu Apr 28 11:24:13 2011 from 192.168.10.1

Mellanox Switch

sx-43 [standalone: master] >
```

- Step 4.** You can enter any supported command now.

3.2 Resetting the Switch

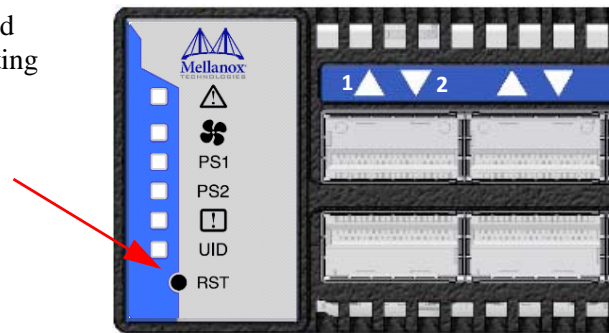
On the connector side panel under the system LEDs is a reset button. This reset button requires a tool to be pressed.



DO NOT use a sharp pointed object such as needle or push pin for pressing the Reset button. Sharp objects can cause damage, use a flat object to press this reset button.

Figure 9: Reset Button

Press the reset button to reset the main and management CPUs and to delete the existing password.



This button resets both the CPU of the switch device and the CPU of the management module. It thereby resets all of the ports by bringing them down and powering them up when the button is pushed. A quick push of this button performs this reset. When the button is held down for 15 seconds the switch is reset and the password is deleted. You will then be able to enter without a password and make a new password for the user admin.

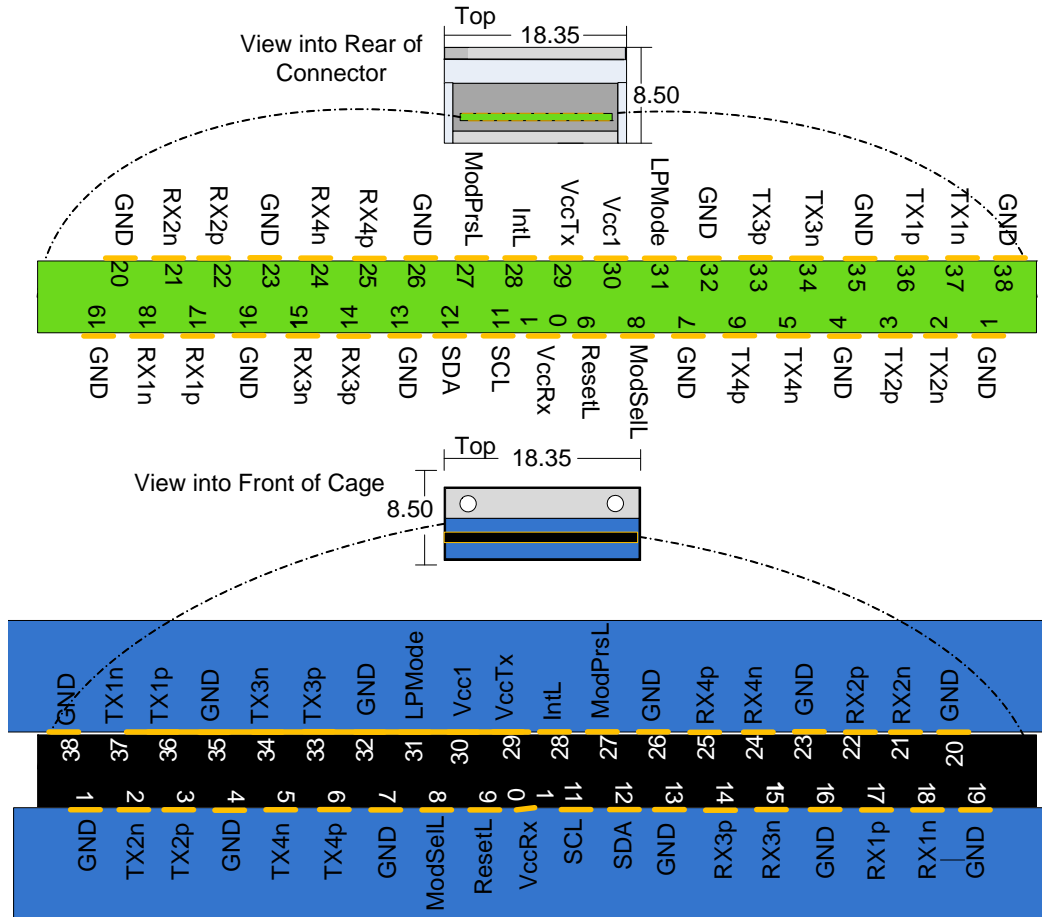
The SwitchX Series User Manuals can be found at:
<http://www.mellanox.com>

Appendix A: QSFP Interface

20	GND	GND	19
21	Rx2n	Rx1n	18
22	Rx2p	Rx1p	17
23	GND	GND	16
24	Rx4n	Rx3n	15
25	Rx4p	Rx3p	14
26	GND	GND	13
27	ModPrsL	SDA	12
28	IntL	SCL	11
29	VccTx	Vcc Rx	10
30	Vcc1	ResetL	9
31	LPMODE	ModSelL	8
32	GND	GND	7
33	Tx3p	Tx4p	6
34	Tx3n	Tx4n	5
35	GND	GND	4
36	Tx1p	Tx2p	3
37	Tx1n	Tx2n	2
38	GND	GND	1

Table 8 - QSFP Connector Pinout

Connector Pin Number	Connector Pin Name	Signal Description
1	GND	Ground
2	Tx2n	Transmitter Inverted Data Input
3	Tx2p	Transmitter Non-Inverted Data Input
4	GND	Ground
5	Tx4n	Transmitter Inverted Data Input
6	Tx4p	Transmitter Non-Inverted Data Input
7	GND	Ground
8	ModSelL	Module Select
9	ResetL	Module Reset
10	Vcc Rx	+3.3 V Power supply receiver
11	SCL	2-wire serial interface clock
12	SDA	2-wire serial interface data
13	GND	Ground
14	Rx3p	Receiver Non-Inverted Data Output
15	Rx3n	Receiver Inverted Data Output
16	GND	Ground
17	Rx1p	Receiver Non-Inverted Data Output
18	Rx1n	Receiver Inverted Data Output
19	GND	Ground
20	GND	Ground
21	Rx2n	Receiver Inverted Data Output 3
22	Rx2p	Receiver Non-Inverted Data Output 3
23	GND	Ground
24	Rx4n	Receiver Inverted Data Output 3
25	Rx4p	Receiver Non-Inverted Data Output 3
26	GND	Ground
27	ModPrsL	Module Present
28	IntL	Interrupt
29	Vcc Tx	+3.3 V Power supply transmitter
30	Vcc 1	+3.3 V Power Supply
31	LPMODE	Low Power Mode
32	GND	Ground
33	Tx3p	Transmitter Non-Inverted Data Input
34	Tx3n	Transmitter Inverted Data Input
35	GND	Ground
36	Tx1p	Transmitter Non-Inverted Data Input
37	Tx1n	Transmitter Inverted Data Input
38	GND	Ground



Appendix B: RJ45 Console and Ethernet Interfaces

The RJ45 Console and Ethernet interfaces uses the EIA 568A standard wiring color coding.

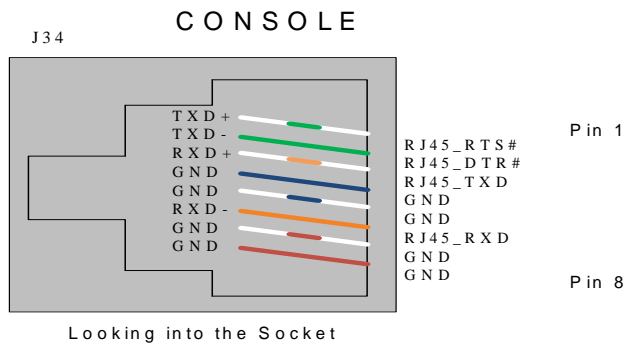


Table 9 - RJ45 Pinout

Connection	Signal	Pin#	Color
TXD+	RJ45_RTS#	1	G/W
TXD-	RJ45_DTR#	2	G
RXD+	RJ45_TXD	3	O/W
GND	GND	4	Bl
GND	GND	5	Bl/W
RXD-	RJ45_RXD	6	O
GND	GND	7	Br/w
GND	GND	8	Br

Appendix C: Replacement Parts Ordering Numbers

Table 10 - Replacement Parts Ordering Numbers

Part Description	OPN
I2C DB9 or RJ45 to USB Adapter	MTUSB-1
Fan module with power supply side to connector side air flow	MSX60-FF
Fan module with connector side to power supply side air flow	MSX60-FR
300W Power Supply w/ Power Supply Side to Connector side air flow	MSX60-PF
300W Power Supply w/ Connector side to Power Supply side air flow	MSX60-PR
Power cord Type C13-C14	ACC000500
Installation Kit for short switches in racks 40-60 cm deep	MSX60-BKIT
Installation Kit for short or standard switches in racks 60-80 cm deep	MSX60-SKIT